Aspect, Lexical Semantic Properties, and Argument Expression
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Aspect, Lexical Semantic Representation, and Argument Expression[1]

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Over the last twenty years aspectual notions have been increasingly appealed to in structuring verbal lexical semantic representations and, concomitantly, in formulating principles of argument expression. This move has been further fueled by the significant insights that have emerged from this line of research. Yet, despite the enthusiasm for aspectual notions that their proliferation demonstrates, I propose that such notions are not the panacea that their considerable use would suggest. Although I also have adopted them in my work, my continuing research into lexical semantic representation and argument expression has suggested to me that the links between aspect, lexical semantic representation, and argument expression are not so simple and transparent as they are made out to be. I use this study to reassess the contributions of aspect to lexical semantic representation and argument expression.

The striking acceptance of aspectual notions as a means of structuring lexical semantic representations may have its roots in some well-known drawbacks of lexical semantic representations that take the form of semantic role lists. As often pointed out, semantic role lists are not grounded in a theory of events, leaving them unconstrained and vulnerable to criticism. Aspectual classifications, proposed at least as early as Aristotle and taken up more recently by Vendler (1957), Kenny (1963), and many others, offer a ready-made theory of the ontological types of events, which grounds them in their temporal contours. Furthermore, aspectual classifications have proved their usefulness in accounts of temporal entailments and temporal adverbial distribution. With this incentive, aspectual classes have been increasingly adopted as the appropriate event types for the twin purposes of structuring lexical semantic representations and formulating a theory of argument expression, as I now review. I then consider how well such attempts succeed. I suggest that it is right to ground lexical semantic representations in a theory of event structure, but that the

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ontological types of events relevant to argument realization may not all be aspectual in nature.[2] Throughout I try to understand why aspectual notions have proved so attractive as determinants of argument expression.

1. Background

Given this paper's shortness, I cannot do justice to the large literature on the interactions of aspect, lexical semantic representation, and argument expression, but I review highlights to set the context for a critical reevaluation of previous work.

Aspectual notions are viewed as important to structuring lexical semantic representation. To the extent that such a representation is now seen as taking the form of an event structure, the claim is that the ontological types of events are determined by their temporal contours. Dowty (1979, Chapter 2) reinterprets the predicate decompositions characteristic of generative semantics as reflecting the Vendler aspectual classes. Many have adopted this reinterpretation, including Foley & Van Valin (1984), but for some cautionary notes see Dowty's own Chapter 3, Van Valin & LaPolla (1997), and section 2. Sample lexical semantic representations for each of Vendler's aspectual classes from Rappaport Hovav & Levin [RH&L] (1998:108) are given in (1). Of particular note is the analysis of accomplishments as causatives, i.e., as having the form 'event cause event'[3] (see (1d)).

(1) a. ACTIVITY: [x ACT$_{<MANNER>}$]

b. STATE: [x <*STATE*>]

c. ACHIEVEMENT: [BECOME [x <*STATE*>]]

d. ACCOMPLISHMENT:
[[x ACT$_{<MANNER>}$] CAUSE [BECOME [y <*STATE*>]]]

Since the Vendler classes define a set of event types in terms of their temporal contours, their predicate decompositions would be expected to be temporal in nature. Yet representations such as those in (1) are only temporal if the primitives themselves are given such an interpretation, for instance, as Dowty (1979:73-78, 139-145) does for BECOME.

In recent years there have been a range of efforts to make syntactic structures more abstract so that semantic distinctions can be retained in syntactic structure. One consequence is a line of work that syntacticizes event structure (e.g., Arad 1998; Borer 1998; Ritter & Rosen 1998; Erteschik-Shir & Rapoport 1997; Slabakova 1997). This work uses aspectual considerations to motivate syntactic

[2] Although this paper calls into question the use of an aspectually-grounded semantic representation in accounts of argument realization phenomena, such representations are most likely necessary for accounts of temporal properties of events, but these properties are not the topic of this paper.

[3] As Dowty (1979) notes, the representation 'event cause event' permits atelic accomplishments. Since prototypical accomplishments are telic, many limit them to the subtype 'activity cause achievement', as in (1d) from RH&L (1998).

structure, such as the inclusion of explicit Aspect or Event Phrases among the functional projections of a sentence (e.g., Borer 1998; McClure 1993; Ramchand 1997; Travis 1991, 2000) or the association of AgrO with notions of delimitation or telicity (e.g., Ritter & Rosen 1998; van Hout 1996). (See Rosen (1999) for discussion.)

Aspect has also been said to figure in argument expression. This idea dates back at least to Hopper & Thompson's (1980) inclusion of "telicity" and "punctuality" among the semantic components of transitivity. Since then aspectual notions have increasingly been included among semantic determinants of argument expression, even if different researchers cite different, though overlapping, aspectual notions, including measure, delimiter, incremental theme, telicity, and accomplishment. Aspectual notions, particularly telicity, came into prominence as determinants of syntactic behavior when they were implicated in passive nominals (e.g., Fellbaum 1987; Tenny 1987, 1994), middle formation (e.g., Tenny 1987, 1994), and unaccusative diagnostics such as auxiliary selection (e.g., Centineo 1986; Dowty 1991; Van Valin 1990; Zaenen 1993). Van Hout (1996) proposes that many argument expression alternations are instances of event type-shifting—i.e., aspectual reclassification. (e.g., conative, resultative formation, cognate object addition). Some studies (e.g., Ackerman & Moore 1999; Arad 1998; Borer 1998) associate telicity with accusative case, citing accusative/partitive alternations associated with telicity shifts in Finnish and Hebrew, as well as the use in some languages of oblique rather than accusative case for one argument of two-argument atelic verbs.

Ties between objecthood and aspectual notions appear in a range of work. Dowty (1991) includes the notion "incremental theme" among his proto-patient entailments, which determine the object of a transitive verb. "Incremental theme" is the name Dowty gives to the participant in an event that is crucial to determining the event's boundedness: it defines a homomorphism from its own properties—e.g., its physical extent—to the time course of the event itself (Dowty 1991; Krifka 1989, 1992; Ramchand 1997; see Hay, Kennedy & Levin [HK&L] 1999 for refinement and extension of this notion). Verkuyl (1993:20) proposes a compositionality principle, the Plus Principle, which has the effect of requiring objects to contribute to bounding an event; as a result, basically atelic transitive verbs such as *push* must be analyzed as not being true transitives (329-349). Tenny (1987, 1994) proposes a strong and explicit role for aspect in argument expression, as embodied in her Aspectual Interface Hypothesis.

> The universal principles of mapping between thematic structure and syntactic argument structure are governed by aspectual properties. Constraints on the aspectual properties associated with direct internal arguments, indirect internal arguments, and external arguments in syntactic structure constrain the kinds of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the universal linking principles. (Tenny 1994:2)

2. Disentangling the Aspectual Notions

With this background I now try to disentangle aspectual notions from each other and from other semantic notions. Sometimes what is taken to be an aspectual generalization might in fact be based on a nonaspectual semantic notion. A well-known instance of such a confusion is presented by Lakoff's purported stativity tests (1966), many of which turn out to be tests for agentivity (Dowty 1979:112; Levin & Rappaport Hovav [L&RH] 1995:170-171). The appropriate criterion underlying these diagnostics was misidentified because so many nonstative verbs are agentive, and only once these two notions were teased apart did it became clear that agentivity rather than stativity was critical to some tests. I explore the interrelations between an aspectual and a nonaspectual notion—accomplishment and causative—and then between two aspectual notions—incremental theme and telicity.

2.1. The Independence of Causation and Telicity

Many researchers working on argument expression identify the notion "accomplishment"—traditionally defined as a durative event with a set terminal point—with the notion "causative," including Sybesma (1992), Van Valin and colleagues (Foley & Van Valin 1984; Van Valin 1990). This proposal is often attributed to the discussion in Chapter 2 of Dowty (1979). However, in Chapter 3 Dowty shows that these two notions cannot be so readily equated and proposes that the temporal properties of accomplishments are better explained in an interval semantics. (This move is not surprising given that Dowty's analysis of CAUSE is not temporal in nature (1979:99-110).) Nevertheless, the causative analysis of accomplishments continues to be adopted in work on argument realization, despite further studies affirming the independence of the notions "accomplishment" and "causative" (HK&L 1999; Pustejovsky 1991; Van Valin & LaPolla 1997).

It is not hard to show that not all causatives are accomplishments. Certain atelic—i.e., temporally unbounded—verbs such as intransitive *fly* or *bounce* have causative uses that are atelic, as illustrated by their cooccurrence with *for* rather than *in* adverbials in (2). In fact, McCawley (1976) argues that causation cannot be reduced to any aspectual notion, and Van Valin & LaPolla (1997:97) show there are verbs of every aspectual type with causative uses of the same aspectual type.

(2) a. Robin flew a kite for an hour/#in an hour.

b. Lee bounced the ball for ten minutes/#in ten minutes.

Nor are all accomplishments causatives, notwithstanding persistent assumptions to the contrary. I first consider manner of motion verbs and then, briefly, verbs of consumption. Manner of motion verbs with goal phrases, as in (3), are frequently used to exemplify telic predicates.

(3) Kim jogged to the store.

Two subevents are identifiable in such examples; in (3) these are an event of jogging and an event of arriving at the store. Some have claimed these subevents are causally related. Thus, Croft gives *The boat sailed into the cave* the paraphrase 'the activity of sailing *causes* the motion to come about' (1991:160), while Van Valin (1990:224, (3d)) proposes that *Susan ran to the house* is represented as in (4).

(4) [**run**′(Susan)] CAUSE [BECOME **be-at**′(house, Susan)]

I present several reasons drawn from L&RH (1999) for rejecting a causative analysis. For additional reasons, see Van Valin & LaPolla (1997), who argue that a noncausative analysis is preferable to Van Valin's earlier causative analysis.

The syntax of such examples suggests a causative analysis is inappropriate. Prototypical lexical causative verbs such as *kill* or two-argument *break* are transitive, and, in fact, RH&L (1998) argue for a theory of argument realization that requires causative events to be realized by transitives (though it does not require all transitives to be causatives); see section 5. Yet events of motion in some manner to a goal are not expressed with a transitive verb, as would be expected on RH&L's theory.

The temporal relation between the subevents in expressions of manner of motion to a goal is different from that in lexical causatives. L&RH (1999) point out that in sentences such as (3), the subevents are necessarily temporally dependent: they unfold together. In (3) the jogging continues precisely as long as the going to the store does. In contrast, in true lexical causatives the subevents need not be temporally dependent. L&RH cite the examples in (5), pointing out that in (a) the piano playing may have been protracted, but the waking up could have taken an instant, in (b) Terry's decision could have been made well before Sandy hears of it, and in (c) the act of putting poison in the soup does not extend to the point of death.

(5) a. Casey's piano playing woke the baby.

b. Terry shocked Sandy by deciding to run for office.

c. The widow murdered the old man by putting poison in his soup.

(L&RH 1999:211, (28))

Like manner of motion verbs, sound emission verbs are found with goal phrases to describe motion towards a goal, as in *The truck rumbled into the garage*, and again two subevents can be perceived: a motion event and a sound emission event. However, as L&RH (1999) note, the way in which the verb and the goal XP are associated with what are understood to be the causing and resulting subevents differs for each verb type. In (6a), the running—denoted by the verb—causes the movement into the room—denoted by the XP, but in (6b) the movement into the room—denoted by the XP—causes the rustling—denoted by the verb.

(6) a. Terry ran into the room.

b. Terry rustled into the room. (L&RH 1999:206, (15))

In contrast, when verbs of these two types occur in reflexive resultatives, as in (7), which L&RH (1999) argue do receive a causative analysis, the verb is always associated with the causing subevent and the XP with the resulting subevent. Thus, in (7a), the walking—denoted by the verb—causes the exhaustion—denoted by the XP—and in (7b), the whistling—denoted by the verb—causes the dryness—denoted by the XP.

(7) a. Tracy walked herself to exhaustion.

b. The kettle whistled itself dry.

L&RH (1999) argue that although conceptually there are two subevents in sentences with manner of motion or sound verbs plus goal phrases, in event structure terms they involve a single event (i.e., the two subevents are predicated of one event variable). This event structure is reflected in the temporal dependence between the subevents. If such examples have a simple event structure, there is no reason to assume a fixed correlation between certain meaning components and certain syntactic categories since the relevant components are associated with the entire event. But if reflexive resultatives are causatives and, thus, truly bieventive, then each subevent has a fixed role in the larger event and, hence, a fixed expression. The result is the invariant meaning-form correlation in (7). Once again, there is reason not to treat the telic uses of manner of motion verbs as causatives.

I now turn to verbs of consumption, such as *eat* and *drink*, which are often mentioned in the literature on telicity.[4] As is well known, these verbs are activities when objectless or taking a nonbounded object, but accomplishments when taking a bounded object, as illustrated in (8) with the progressive-to-perfect entailment test.

(8) a. Pat is eating. ⇒ Pat has eaten. (ACTIVITY)

b. Pat is eating rice. ⇒ Pat has eaten rice. (ACTIVITY)

c. Pat is eating a plum. ⇏ Pat has eaten a plum. (ACCOMPLISHMENT)

If accomplishments are causatives, then verbs of consumption should have a causative analysis, at least, when telic. Yet it seems unsatisfying to have the telicity of sentences with these verbs determine whether they receive a causative analysis, since lexical causative verbs such as *kill* or transitive *break* are uncontroversially assigned a causative analysis whether their objects represent a bounded quantity or not and thus whether the uses are telic or not, as shown in (9).

(9) a. Kelly broke the glass in 10 seconds flat/#for 10 seconds.

b. Kelly broke crystal for/#in an hour.

[4] Verbs of creation such as *build* are often discussed together with verbs of consumption, and it appears that the arguments presented here against a causative analysis of verbs of consumption could be extended to these verbs as well.

One solution is simply to assign verbs of consumption a causative analysis generally, as proposed by Jackendoff (1990), whose representation for *eat* is in (10).

(10) [CAUSE([$_{\text{Thing}}$]$^{\alpha}_{A}$,[GO([$_{\text{Thing}}$]$_{<A>}$, [TO [IN [MOUTH-OF [α]]]])])]
(Jackendoff 1990:253, (20a))

Jackendoff does not adopt a bieventive analysis of causatives, but assuming a bieventive analysis is preferable (Dowty 1979; Parsons 1990), the two subevents of a consumption event would probably be an event of ingesting food and one of the food diminishing in quantity. (This analysis differs somewhat from Jackendoff's, but seems to better capture what is relevant to the aspectual properties.) However, verbs of consumption show a necessary temporal dependence between these subevents: in eating, the ingesting and the consuming unfold together. This dependence is not characteristic of lexical causatives (see (5)). It seems best to assign verbs of consumption a simple event structure, with boundedness of the event determined by boundedness of the stuff denoted by the direct object—or more accurately, a spatial property of this stuff, its volume (HK&L 1999). A causative analysis of these verbs seems unmotivated, as Van Valin & LaPolla (1997) also argue.

2.2. The Independence of Incremental Theme and Telicity

Accounts of telicity often refer to the notion "incremental theme" or a comparable notion, such as Tenny's "measure" (1994:94-95) or Verkuyl's "odometer" (1993:221-224). Despite suggestions to the contrary, events may have an incremental theme without being telic, as argued by Filip (1999), HK&L (1999), Jackendoff (1996), Krifka (1992), L&RH (1995), Ramchand (1997), among others. The independence of these notions can be illustrated with "degree achievements," Dowty's (1979) name for a set of change of state verbs, mostly based on gradable adjectives, which display ambiguous telicity (Abusch 1986; Bertinetto & Squartini 1995; Dowty 1979; HK&L 1999). They include *cool, lengthen*, and *widen*. Each degree achievement can be interpreted as telic, as in (11a), or atelic, as in (11b). These verbs can be used transitively as well, and they again manifest ambiguous telicity, as shown in (12).

(11) a. The soup cooled in an hour.
b. The soup cooled for an hour.

(12) a. The cook cooled the soup in an hour.
b. The cook cooled the soup for an hour.

As HK&L (1999), Jackendoff (1996), and Ramchand (1997) point out, the gradable adjective associated with a degree achievement defines a scale, and it is the boundedness of this scale that determines the telicity of the event. The scale exists

whether it is bounded or not and, hence, whether the event is telic or not. Just because a component of an event can be used to judge its progress, doesn't mean that this component—or the event itself—has to be bounded.

3. Certain Aspectual Distinctions Do Not Influence Argument Expression

In this section I reconsider the role of aspectual distinctions in argument expression, particularly given claims as strong as Tenny's Aspectual Interface Hypothesis (1987, 1994). As I show, many grammatically-relevant semantically-coherent verb classes à la Levin (1993) contain aspectually heterogeneous members; that is, their members do not share the same temporal properties. Given that the class members nevertheless show the same argument expression options, aspectual notions cannot be the sole determinants of argument expression.

A survey of the verb classes in Levin (1993) reveals classes containing both activity and semelfactive verbs. Semelfactive verbs—representing perhaps the least studied aspectual class—describe instantaneous events that do not involve a definite change, such as *beep*, *blink*, *cough*, and *tap* (Smith 1991). Semelfactives are known to be related to activities. A semelfactive verb may name a punctual happening or a series of repetitions of this happening; for example, the verb *tap* may describe one tap or many. Repetitions of such punctual happenings may be construed as simple events—specifically, as activities—rather than as iterated events, as is the case when events of other aspectual types are repeated. I use the term "semelfactive verb" to refer to a verb which allows a semelfactive interpretation, recognizing that such a verb also permits repetitive, durative uses. In fact, Olsen (1997) proposes that durativity is a privative property, and she characterize semelfactives as underspecified for durativity and activity verbs as necessarily durative. Each verb class in (13) contains verbs that pattern together according to Levin (1993), yet their members differ as to whether they are basically semelfactives or basically activities.

(13) a. VERBS OF IMPACT: bang, batter, beat, hit, kick, pound, rap, slap, smack, tap, thump, thwack, whack, ...

b. VERBS OF LIGHT EMISSION: flash, flicker, gleam, glisten, glitter, shine, sparkle, ...

c. VERBS OF SOUND EMISSION: bang, buzz, creak, hum, jingle, rumble, rustle, squeak, thud, ...

d. VERBS OF SUBSTANCE EMISSION: gush, ooze, puff, spew, spurt, squirt, ...

Moving beyond these classes, Levin (1999) points out that both activity and semelfactive verbs are found in reflexive resultatives and with *out*-prefixation, as in (14) and (15), respectively; in contrast, causative change of state verbs resist these environments. The existence of a shared pattern of grammatical behavior supports the assignment of a common event structure to both activity and semelfactive verbs,

as argued in Levin (1999). Consequently, the inventory of event types relevant to argument expression cannot include aspectually-defined activity and semelfactive event types, and Levin suggests that a nonaspectual definition of the relevant event type might use L&RH's (1995) notion "internally caused event."

(14) a. ... lost children who have finally cried themselves quiet. (K. Kijewski. *Katwalk*. New York: St. Martin's. 1989. p. 68)

b. "Don't use my name," I said, blinking myself awake. (L. Matera. *Havana Twist*. New York: Simon and Schuster. 1998. p. 56)

c. By that time Sophie had swept and scrubbed herself into a state when she could hardly move. (D. Wynne Jones. *Howl's Moving Castle*. New York: Greenwillow. 1986. p. 43)

d. At his current pace, however, Sauerbrun would kick himself into the NFL record book ... (S. Mickles. Murray Ready to End Davis' Reign. *The Advocate*. Baton Rouge, LA. October 10, 1997. p. 1D)

(15) a. Michelle Kwan outskated two Russians for the title ... (picture caption, *The New York Times*, April 2, 2000, p. 36)

b. Stockowski and Dixon were outjumped by bigger, stronger girls ... (J.C. Cotey. Parents Enjoy Sweat Rewards. *St. Petersburg Times*. July 10, 1999. p. 7C)

c. "... They outhit us and outplayed us. ..." (D. Ventura. School Sports; Division 2 North; Danvers Dances. *The Boston Herald*. June 13, 1999. p. B46)

d. ... their American Security Bank teammates calmly outtugged their obviously straining opponents ... (P.S. Canellos. Jocks of All Trades. *The Washington Post*. July 14, 1986. p. C1)

Another example is presented by the English denominal verbs that Clark & Clark (1979) label "locatum verbs": verbs such as *roof* or *butter* that are paraphrasable as 'put entity named by the base noun on'. As Harley (1999) observes, the telicity of these verbs depends on the base noun. When it is a count noun (e.g., *blindfold, roof, saddle, shoe*), the related verb is necessarily telic, as shown in (16). When it is a mass noun (e.g., *butter, flour, grease, water*), the related verb may be telic or atelic, as illustrated in (17).[5] This subdivision between necessarily telic and

[5] Harley (1999) describes locatum verbs with mass noun bases as atelic, but aspectual tests, as shown in (17), suggest ambiguous telicity along the lines shown by degree achievements. The actual interpretation as telic or atelic appears to depend on contextual conditions of the type that HK&L (1999) identify for degree achievements. Harley (1999) also extends her claim about the effect of the base noun on the related verb's telicity to Clark & Clark's (1979) location verbs (e.g., *bag, can, garage*). I do not discuss these verbs in the text because I believe the generalization is not as straightforward as Harley suggests, and space limitations prevent me from discussing the contextual conditions that need to be taken into account to fully assess this claim.

variable telicity locatum verbs is not surprising as Olsen (1997) argues that telicity, like durativity, is a privative feature. What matters is that despite differences in their aspectual classifications, locatum verbs constitute a grammatically-relevant semantically-coherent verb class à la Levin (1993).

(16) a. Mary saddled the horse in 5 minutes/#for 5 minutes.
b. The blacksmith shoed the horse in an hour/#for an hour.
(Harley 1999:79, (12a,d))

(17) a. Susan watered the garden in an hour/for an hour.
b. Bill greased the chain in 5 minutes/for 5 minutes.
(Harley 1999:79, (13a,b))

A third example is presented by yet another semantically-coherent set of verbs with uniform behavior that nevertheless contains some verbs that are necessarily telic and others that display variable telicity. As noted in section 2.2, degree achievements may have telic or atelic uses, both when transitive and when intransitive; (a)telicity, then, has no effect on the expression of their arguments. Furthermore, together the transitive and intransitive uses of a degree achievement instantiate the causative alternation characteristic of change of state verbs since the transitive use means roughly 'cause to V-intransitive'. In fact, the class of degree achievements is only singled out in aspectual studies; other lexical semantic studies simply include them in the larger class of change of state verbs along with change of state verbs that are necessarily telic (e.g., *break*, *crack*). The reason is that all these verbs pattern together with respect to a wide range of grammatical behavior, such as the causative alternation, as set out in Fillmore (1970) and Levin (1993).

Similarly, although verbs of inherently directed motion are often classified as telic (e.g., *arrive*, *come*, *go*), L&RH (1995) identify a class of "atelic verbs of inherently directed motion" (e.g, *ascend*, *rise*, *fall*), with both telic and atelic interpretations, as shown in (18). Thus, like change of state verbs, verbs of inherently directed motion may be necessarily telic or may vary in telicity. Yet they all share the same behavior (Levin 1993). Furthermore, studies of unaccusativity, which often mention these verbs, do not find differences among them with respect to unaccusativity diagnostics, at least in English (L&RH 1995:172-173).

(18) The plane descended in/for 10 minutes.

Finally, the notion "incremental theme" cannot be linked solely to objecthood. Tenny (1994:11, (9ii)) proposes that: "Direct internal arguments are the only overt arguments which can 'measure out the event'," where "measuring out" is Tenny's counterpart to "incremental theme." However, as Dowty (1991) points out, the transitive verbs in (19) have incremental theme subjects; analyzing them as unaccusatives, allowing Tenny's generalization to be maintained, is not straightforward.

(19) a. John entered the icy water (very slowly).

b. The crowd exited the auditorium (in 21 minutes).

c. Moving slowly but inexorably, the iceberg took several minutes to pierce the ship's hull to this depth.

(Dowty 1991:570, (25))

The irrelevance of telicity and other aspectual notions to certain facets of argument realization suggests that Tenny's Aspectual Interface Hypothesis is too strong. As a step towards trying to uncover more effective semantic determinants of argument expression, the next section asks why the related notions "telicity" and "accomplishment" are so often cited as organizing notions of lexical semantic representation and as determinants of argument expression.

4. What Is the Source of the Appeal of Aspectual Notions?

I suggest aspectual notions prove appealing because with their temporal grounding, they provide an independent understanding of the notion "complex event"—an event made up of two events—and the related, but also hard-to-pin-down, notion "causative event"—an event consisting of two causally-related events. Such notions figure prominently in the generative semantics literature, where they enter into the explanation of various phenomena, such as the interpretation of adverbials (McCawley 1973; Morgan 1969). Tying the notions to a particular Vendler aspectual type gives a new—and, for that reason, potentially useful—perspective on them and might be the reason why so many studies continue to pursue this link.

I now review two proposals concerning in what sense accomplishments are complex events. The class of accomplishment verbs is quite heterogeneous. Depending on their interests and goals, researchers have focused on two distinct subclasses of this class as "core" accomplishments, leading to two different analyses.

The first analysis, presented in section 1, treats accomplishments as causatives. This analysis takes core accomplishments to include causative change of state verbs. An accomplishment is given a causative lexical semantic representation of the form 'event cause event', which is often instantiated as 'activity cause achievement', as in (1d) (Foley & Van Valin 1984; RH&L 1998; Van Valin 1990). The noncausative counterparts of change of state verbs, as achievement verbs, are given a distinct representation, as in (1c). The relation between the causative and noncausative uses of change of state verbs is brought out by embedding the achievement event structure in the accomplishment event structure; compare (1c) and (1d).

The second analysis, which I refer to as the noncausative analysis, takes the core accomplishments to be predicates formed from the composition of a verb and a delimiting NP or XP, as in *eat an apple* or *run to the store*. In each instance, the verb denotes a process and its object or an XP delimits this process, defining a result state. Telic events are complex events defined as transitions from one event to a second, often a transition from an atelic process to a result state (Pustejovsky 1991,

1995; van Hout 1996). On this analysis, all telic events—whether achievements or accomplishments—are analyzed as transitions and, hence, as complex events; this includes both causative and noncausative uses of change of state verbs.

Both analyses acknowledge accomplishments are complex events. They differ as to whether accomplishments are analyzed as causatives and as to whether achievements are said to be complex events. A serious drawback of the causative analysis is that its uniform treatment of all accomplishments as causatives was shown to be problematic for argument expression purposes in section 2.1. The noncausative analysis unifies all telic predicates by providing them with the same event structure; however, since telicity does not seem to be a determinant of argument expression, as discussed in section 3, this approach does not provide an appropriate basis for a theory of argument realization.[6] Furthermore, the noncausative analysis assigns telic uses of verbs of consumption and verbs of manner of motion the same event structure as lexical causative verbs. The discussion in section 2.1 questioned whether these should all receive a causative analysis, and, this, in turn, suggests that they should not all have the same event structure, whatever it might be.

5. Consequences for Event Structure and Argument Realization

My own research, much of it with Malka Rappaport Hovav, agrees that a lexical semantic representation must incorporate a fundamental distinction between complex and simple events. Building on RH&L (1998), L&RH (1999) argue that the notion "complex event" should be equated with the notion "causative event," and that the notion "causative event" should be cut loose from the notion "accomplishment." On this analysis the simple/complex event distinction is not rooted in traditional aspectual notions. The distinction might appear to be aspectual in nature, as assumed in RH&L (1998), because there is considerable overlap between the sets of accomplishments and causatives; however, the notions "causative" and "accomplishment" are independent, as supported by the evidence in section 2.1, which shows that there are noncausative accomplishments and atelic causatives.

The linguistic representation of an event, then, is characterized according to whether it is complex, consisting of two causally-related subevents, or simple, consisting of a single subevent. As mentioned in section 2.1, L&RH (1999) posit that what is essential to a causative event is that its subevents are not necessarily temporally dependent. L&RH (1999) argue that an event with perceived subevents that are necessarily temporally dependent, as in *Kim jogged to the store*, is treated linguistically as a simple event; they propose that the subevents are "coidentified"—that is, they could be said to be predicated of the same event variable.

[6] It is possible that the notion "transition" that figures in the noncausative approach's definition of "complex event" may have a place instead in the formalization of telicity since it provides a way of characterizing what makes an event bounded; however, "incremental theme" and related notions may be preferable for this purpose. It is the notion "incremental theme" and its relatives that figure in the formalizations of telicity, such as Krifka (1989, 1992), Ramchand (1997), and Verkuyl (1993).

Levin (1999) argues that semelfactives and activities pattern together because both have simple event structures, and it is this shared property that determines their argument realization options. The fact that degree achievements—which vary in telicity—pattern with necessarily telic change of state verbs follows because the aspectual characteristics of degree achievements are not relevant to the simple/complex event distinction. Telicity in a change of state verb requires that the change in the scalar property associated with a particular verb of change of state be bounded (HK&L 1999). In some instances, the nature of the property itself requires that the change be bounded, as with *break*. In other instances, boundedness depends on a combination of the nature of the state itself, the nature of the entity that is changing state, and properties of the context (HK&L 1999).

Strong support for taking the simple/complex event distinction to be fundamental to lexical semantic representation comes from argument realization patterns that reflect event complexity (Levin 1999; L&RH 1999; RH&L 1998). A consequence of conditions on argument realization proposed in RH&L (1998) is L&RH's (1999) Argument-Per-Subevent Condition in (20)—a condition comparable to others in Grimshaw & Vikner (1993), van Hout (1996), Kaufmann & Wunderlich (1998).

(20) THE ARGUMENT-PER-SUBEVENT CONDITION: There must be at least one argument XP in the syntax per subevent in the event structure.

If correct, the Argument-Per-Subevent Condition requires that event structures with two subevents give rise to sentences with a subject and an object, while simple event structures give rise to sentences which only need a subject. RH&L (1998) demonstrate that the distinct argument expression options manifested by two semantic classes of two-argument verbs—verbs of surface contact and motion (e.g., *wipe*, *rub*, *scrub*, *sweep*) and the previously discussed change of state verbs—can be tied to differences in the complexity of the events denoted by the verbs in each class. Verbs of surface contact and motion have a simple event structure with a single subevent, while, as causatives, change of state verbs have a complex event structure with two subevents. By the Argument-Per-Subevent Condition, change of state verbs are expected to be transitive, while verbs of surface contact and motion need not be, though they describe events with two participants. Consistent with this expectation, verbs of surface contact and motion are found with unspecified objects, while change of state verbs are not (RH&L 1998).[7]

(21) a. Leslie swept (the floor).

b. * Kelly broke again tonight when she did the dishes.

[7] Goldberg (in press) points out that under certain conditions change of state verbs can appear with omitted objects; however, Wright & Levin (2000) note that surface contact verbs and other transitive verbs whose event structure consists of a single subevent allow the omission of their objects even when these special conditions are not met. Thus, although RH&L's conditions on argument realization need to be modified to allow for restricted argument omission with change of state verbs, Wright & Levin contend that RH&L's basic analysis remains valid.

The two verb types are also predicted to vary in terms of permissible objects (RH&L 1998). Since change of state verbs must express both arguments (an agent and a patient), their object must be the patient. However, since verbs of surface contact and motion need only express their agent, they are free to occur with other than "normal" objects. In fact, in (22a) *wipe*'s object is understood as an instrument; the table is taken to be the wiped surface despite its expression in a PP. In contrast, though in (22b) *break*'s object, *the stick*, is a prototypical instrument, it is nevertheless understood as the patient; (22b) cannot mean 'Kelly broke the fence'.

(22) a. Leslie wiped the cloth over the table.

b. Kelly broke the stick over the fence.

6. Aspect Once More

In conclusion, I have reexamined the contribution of certain well-known aspectual notions to the structuring of lexical semantic representation and the characterization of argument expression. I have argued that some aspectual notions are not semantic determinants of argument expression; however, I propose aspectual notions broadly construed still have a part to play in lexical semantic representation and argument expression. As reviewed in section 5, L&RH (1999) suggest that the criterion for determining that an event with two conceptually-identifiable subevents is a causative—and hence complex—event rests on the temporal relations between its subevents: these subevents cannot be necessarily temporally dependent. Thus, the notion "complex event" involves the event's temporal contour, even if it does not involve a familiar aspectual notion. Though I have argued that one commonly cited notion, "telicity," is not a determinant of argument expression,[8] I do not deny its importance. However, its contribution is in other domains, such as the computation of the temporal interpretation of a sentence. By challenging certain received assumptions, this paper undoubtedly raises as many questions as it answers, but I hope that in so doing it points to fruitful directions for further exploration.

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[8] This statement needs to be qualified. In some languages telicity influences a superficial facet of argument expression: the morphological case of certain arguments (e.g., accusative/oblique case alternations); however, what matters here is that telicity does not directly determine grammatical function, which is what I take to be the core of argument expression.

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